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ABSTRACT

The "see" and "see also" references in a library's catalog are supposed to provide the cross-references necessary to guide the user to the appropriate subject heading. However, libraries have difficulty maintaining the current, accurate subject authority files needed to facilitate this. A review of the literature in this subject area revealed the evidence of this problem in several academic library online public access catalogs. This study evaluated the use of "see" and "see also" references in the five public library online catalogs in Franklin County, Ohio, with disappointing results. Only one of the five catalogs showed evidence of a serious commitment to maintaining the current subject headings and syndetic structure prescribed by the Library of Congress Subject Headings. Of the four other libraries, only one showed any type of effort at creating cross-references; the remaining three displayed virtually no evidence of such links. The results support the notion that many library catalogs are lacking the "see" and "see also" references necessary for them to function properly, as the Library of Congress intended. The established headings used in the study (1xx) with accompanying 4xx and 5xx fields and the data analysis sheet are appended. (Contains 15 references.) (Author)

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# THE USE OF "SEE" AND "SEE ALSO" REFERENCES IN THE PUBLIC LIBRARY CATALOGS IN FRANKLIN COUNTY, OHIO

A Master's Research Paper submitted to the
Kent State University School of Library and Information Science
in partial fulfillment of the requirements
for the degree Master of Library Science

by

Kristen Elder

May, 1996

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The "see" and "see also" references in a library's catalog are supposed to provide the cross-references necessary to guide the user to the appropriate subject heading. However, libraries have difficulty maintaining the current, accurate subject authority files needed to facilitate this. A review of the literature in this subject area revealed the evidence of this problem in several academic library online public access catalogs.

This study evaluated the use of "see" and "see also" references in the five public library online catalogs in Franklin County, Ohio, with disappointing results. Only one of the five catalogs showed evidence of a serious commitment to maintaining the current subject headings and syndetic structure prescribed by the Library of Congress Subject Headings. Of the four other libraries, only one showed any type of effort at creating cross-references; the remaining three displayed virtually no evidence of such links. The results of this research support the notion that many library catalogs are lacking the "see" and "see also" references necessary for them to function properly, as the Library of Congress intended.

Master's Research Paper by

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## INTRODUCTION

The quality of "see" and "see also" references in a library's catalog directly affects its users' ability to conduct research and locate materials in the library. As both a library science student and a library user, discovering instances where "see" and "see also" references prescribed by the Library of Congress Subject Headings are not present in a library's catalog is both frustrating and dismaying. Frustrating, in that it prevents one from locating items on a given topic that the library is known to possess; and dismaying, in that certain concepts stressed in cataloging courses are not always enacted upon in reality. Cataloging courses impress upon students the importance of providing the best possible access to items, with relevance to the size and the type of the library. When certain minimal references are not given, it represents a breakdown in the catalog and, thus, the catalog's ability to serve its users.

Subject authority control can eliminate many of these problems if libraries practice it correctly by checking subject headings assigned against those already used in the catalog and making the appropriate "see" and "see also" references. Care must also be taken to do retrospective checks of the authority file to update the subject headings and their cross references. It is little wonder that libraries have difficulty accomplishing this; authority work is very costly (Fiegen, Heitsheu, and Miller, 1990). It is a labor-intensive process which, to be done

properly, requires a staff of professionals which many libraries (especially public) are lacking.

In this age of increasing technological advances involving the use of computers in the library, there is question of the importance of localized subject authority efforts (Taylor, 1984). After all, do patrons really use subject searching tactics when other options, such as keyword searching, truncation and Boolean searches are available? There is evidence indicating that the answer is a definite "yes" (Lipow, 1983; Markey,1985). Still, there may be reason to question the necessity of subject authority control efforts on the part of individual libraries when they use copy cataloging from services such as Library of Congress, or Online Computer Library Center (OCLC). However, problems arise when libraries incorporate these services without taking responsibility for maintaining the currency of their authority files. Though OCLC provides current data that reflect the Library of Congress's continual subject heading revisions, what is current today will not necessarily remain current. When libraries are not in the practice of conducting periodic, retrospective checks of their authority files for subject heading changes of items cataloged in the past, they are not controlling the quality of their subject authority files. As previously stated, this is an expensive process, but to ignore doing so can prove to be even more costly in the end (Connell,1996?; Lipow,1983).

Due to my interest in subject authority control, and

shared belief with others (Connell,1996?; Palmer,1986) that it is not practiced as widely or as well as it should be, I researched its application in the five different public library online catalogs in Franklin County, Ohio. My initial interest in this topic stemmed from a previous class project in which I discovered, through the examination of MARC records, that two of the above-mentioned libraries have inconsistencies present in their catalogs. I then read a forthcoming article by Tschera Harkness Connell where the use of "see" and "see also" references was considered in the academic library setting, with some disappointing results. I examined the public library as a different point of view on this little-researched subject, to see how the results are similar, or how they differ.

Since the Franklin County public libraries represent five different computerized cataloging systems, they provided a workable number of samples for my study. As a resident of and student in Franklin County, the quality of the public library catalogs is of interest to me. The varying sizes of the public library systems provided a point of comparison: do larger libraries have better accuracy in the syndetic structure of their subject cataloging than the smaller libraries? My study also incorporated the issue of blind leads in catalogs, where patrons are led to references for which there are no materials in the library. This, in combination with other problems in the subject authority file, can affect a user's search strategies, and his or her overall ability to conduct research. Through my

study, I examined whether or not Franklin County public libraries are keeping their subject authority files current with the changes adopted by the Library of Congress Subject Headings.

## LITERATURE REVIEW

Joseph W. Palmer (1986) outlines some basic principles of cataloging as they apply to the topic of subject authority control. First of all, he reminds readers that the "basic aims of the catalog are LOCATION and COLLOCATION" (72). A catalog should employ subject headings in such a manner that a patron can locate specific items by subject (location). All of the works on that subject should then be listed together in the catalog (collocation). To ease some of the difficulties of this, libraries are expected to employ certain principles in cataloging, such as specific entry, which "prescribes that a work be entered under the most specific applicable heading and not under the more general heading" (1986, 72-73). "See also" references will lead the patron from general to the specific heading. The purpose of the authority file is to "keep track of current headings and references and to avoid 'Blind Leads'" (1986, 73), by indicating which subject headings have been used in the catalog and the subsequent references that have been made. With either no authority file, or the lack of authority file maintenance, libraries will have a difficult time recognizing

changes in headings and references, and identifying potential blind leads.

Since the Library of Congress constantly updates its subject headings to respond to societal changes and developments, as represented in the materials it collects, libraries must reflect these changes in their authority files and catalogs if the entire system is supposed to work.

> Subject headings are assigned predicated on the assumption that they will be used on catalogs that contain the prescribed 'see' and 'see also' reference. Furthermore, it is assumed that when [Library of Congress Subject Headings] headings change- the library catalog will also change and that a subject authority file is being maintained to make these revisions of headings and references possible (Palmer, 1986, 73).

This is how LC intends libraries to employ its subject headings, and in theory, this is what should happen. Somewhere along the line, there is a breakdown, because the results of Palmer's study indicate that this does not always occur.

> While many (most?) libraries today are accepting LC heading as they appear on cataloging copy, some (most?) are not implementing the practices which are supposed to make the LC subject heading system work (1986, 72).

There have been various reasons suggested by various authors throughout the literature to explain this problem.

At the very root of the problem lies money. Libraries never have enough resources to accomplish everything they would like. The use of staff time translates into money. As Palmer states, "the time and labor involved in maintaining such files can be very great with a disproportionate amount being required

to keep 'see also' references current and accurate" (72). Fiegen, Heitshu and Miller (1990) support Palmer's point with the statement, "Two of the highest cost components of the cataloging process are authority work and the labor associated with that work" (253). Most public libraries do not have a large professional staff on hand for the sole purpose of maintaining authority files. Choices have to be made as to where the priorities must lie.

> In these times of rising costs, tighter budgets, and staggering amounts of material to be processed, cataloging departments must weigh the goal of highest quality cataloging against the need to make materials available to the patron in a timely, cost effective fashion (Salas-Tull and Halverson, 1987, 3).

With a continual influx of materials to be cataloged, the staff commits its time to moving the items through the cataloging department and into circulation, with little or no time to maintain the authority records for previously cataloged items.

Other authors also acknowledge what should occur in the cataloging process, but often does not, suggesting that LC itself may be partially to blame for this situation. Martin Runkle states that cataloging a new item properly involves researching the relationship of that item to other items in the catalog, and making the necessary references. Lack of funds to allow for a highly-trained staff to perform this specific task forces most libraries to rely on LCSH. He adds, "Of course, as most catalogers know, following LC and keeping up with their changes is not always a straightforward matter" (1980, 604). In addition

to the labor involved with keeping authority files current, librarians must also stay abreast of LC's continual changes in rules and procedures. Runkle is certainly not the first to suggest that LC's subject headings procedures may be less than perfect.

In 1972, George M. Sinkankas conducted a study to evaluate the syndetic structure of LCSH. His conclusions were that it was not well structured. He shows that if one follows the "see also" references listed for a subject heading, one is quickly led out of the subject area in which one is searching into something completely unrelated. If LCSH has a faulty hierarchical structure, the possibility that library catalogs contain flaws logically ensues. Libraries can make mistakes by not customizing LCSH to suit their catalog. If they do not own materials on all subjects for which there are "see also's" for a given term, these references should not be in the catalog. This is how blind references occur. However, Sinkankas is quick to make the point that,

> LC does not help in this manner, having failed to explain a term or its subject coverage about ninety percent of the time. Scope notes and examples are given only when the situation cries out for them, and many times not even then (Sinkankas, 1972, 8).

The issue of explanation may be improved somewhat since the Sinkankas study with the publication of the Subject Cataloging Manual: Subject Headings, which aims to provide "final authority for the assignment of subject headings [when] used in conjunction with the online names file and the lists of free-floating

subdivisions and other elements in the SCM" (1). Problems within the Library of Congress subject heading system itself may still explain some of the difficulties libraries have with subject authority, but it does not dismiss their responsibility to provide accurate subject access.

Still, questions have been raised conerning the absolute necessity of subject authority control. In an age where keyword, truncated and Boolean searches are available on libraries' online public access catalogs many wonder if patrons use subject searching at all. Studies have indicated that, yes, "there is much more subject searching of online catalogs (OPACs)than expected" (Markey, 1985, 34). Anne Lipow's 1983 findings further support this notion by stating that, "while a keyword approach is useful and allows the user a flexibility in searching not possible in the card catalogs, assigned subject headings are as important as ever" (81). Lipow continues, noting that, "subject access (by keyword or authorized subject heading) even in card catalogs is an important way to get at a known item when the patron is using an incorrect citation" (82). A 1983 study conducted by the Council on Library Resources reported that patrons would like more assistance with subject searches, and the restriction and linkage of subject terms would be greatly appreciated (Matthews, Lawrence and Ferguson, 1983, 178-179). Karen Markey also found that patrons do conduct subject searches, but with difficulty. They are often unable to find the correct subject heading to use in their searching, admitting that they often searched under headings which were

either too broad, or too narrow for their purposes.

In their 1988 study, Van Pulis and Ludy examine the types of subject terms entered by users (broad, narrow, subdivided) and how the catalog responds to those searches (term found, not found, cross-referenced) (523). The authors report a research project at OCLC and a survey conducted at The Ohio State University, which indicated that library users wanted online assistance with subject searching. At OSU, "respondents ranked an online display of related subject headings as their first choice: [of what features they would want in an online catlaog] (Van Pulis and Ludy, 1988, 524). This result shows an interest in subject searching, and an expressed desire for better online subject searching capabilities. However, Van Pulis and Ludy's study found that users may tend "to be satisfied with an initial positive response in searching" (520). Users are typically in a hurry when looking for materials, wanting to get as much information as quickly as possible, with the least amount of effort. The authors cite a comment made by Pauline Cochrane on this type of user behavior, noting that a "more important feature in online catalogs than Boolean operations or proximity searching may be subject searching prompts and aids" (Van Pulis and Ludy, 1988, 530). This feature, of course, requires subject authority control to provide the direction patrons desire in subject searching, and raises the issue of the overall quality of a library's catalog.

With the Van Pulis and Ludy study in mind, it appears that catalogs are not performing the task of providing the necessary

"see" and "see also" references. Rather, the users have "the burden of conjuring up broader or narrower terms" (Markey, 1985, 38). This presents a problem. When a user enters a search term on the computer and is given "x" number of hits, why would he or she feel compelled to question this? Users have "blind faith...that the computerized catalog is all-knowing, all-telling" (Lipow, 1983, 84). The user "thinks that the computer is telling the whole story when asked for material on a subject" (84). When the user expects the catalog to lead him or her to the correct subject heading, and the catalog lacks the necessary authority control and syndetic structure, this expectation cannot be met.

Certainly, libraries could save funds by eliminating authority work, but at what price to users? Taylor (1984) cites Koes as having stated, "if we were to dramatically reduce our costs by eliminating authority work, we do not know how much users would be affected" (2). She finds further support for authority control in online catalogs in Malconico, who stated, "a user cannot know when to end an unsuccessful search if there is no control" (2). A catalog that exists in the absence of control cannot effectively serve its users, especially when the users are relying on the catalog to provide them with the direction they need.

To demonstrate her belief that authority control is a necessity for library catalogs, Taylor cites a study by Elias which rejects the assumption that "small catalogs or data bases do not need authority control because they are easier to search"

(Taylor, 1984, 4). In the study, Elias demonstrated the problems that occurred in her place of employment, the library of the Public and Government Affairs department of Standard Oil, "after six months of storing documents in the computer system with no authority control" (Taylor, 1984, 4). Many of the names of the periodicals in their catalog had more than one form of name; for example, the Wall Street Journal had over twenty various forms. After months of inputting titles, using a variant form for each entry, and not having an authority file to consult, the result was that no one knew exactly how many variant forms there were for each title, or what information was entered under which title. Therefore, when one searched under "Wall Street Journal," there was no way of knowing whether the number of items retrieved was the same as the number of records containing information related to this publication, or if there were more records available entered under countless forms of variant title, of which no one could be certain. The same problem applies to subject searching. If there is no subject authority control indicating what subject headings and which cross-references have been used, the user is unable to discern whether or not he or she has retrieved all of the possible records for that subject heading, or whether he or she should try a different form of heading and, if so, which form should be used.

In this manner, the concept of quality of subject authority control can be related to performance measures, such as recall and precision. Recall equals the number of relevant documents

retrieved, divided by the total number of relevant documents in the file. Precision, on the other hand, is the number of relevant documents retrieved, divided by the total number of documents retrieved (Pao, 1989). Both the recall and the precision of a user's search can be affected when proper subject authority control is lacking. When uniform headings and cross references are not maintained, a patron can search under a term, believing that the results of his or her search have yielded all of the relevant documents in the catalog. In truth, there may be more files pertaining to that topic than the user's search has indicated, because the rest of the documents are entered under an earlier subject heading, or a subject heading not used. It is virtually impossible to project what the actual recall and precision of a search should be under such circumstances.

This is why quality needs to be considered when constructing subject authority records. If not done properly, a lot of hard work is wasted, and patrons still do not have the access they need. Taylor observes,

> A great amount of time and effort goes into the creation of authority records, yet many of them contain no cross references at all and many of the ones that do contain references lack them from forms that users find reasonable (1984, 16).

What real use is there in providing a "service" to people, when they find the service inaccurate and/or incomplete. There is much more involved in quality control than providing a service to patrons in a manner which the staff has deemed sufficient. O'Neill and Vizine-Goetz address the true essence of quality

control in their article, "Quality Control in Online Databases" by stating,

> Quality control includes the techniques, activities, and philosophy necessary to produce a product or service of sufficient quality to meet the needs and expectations of its users (1988, 127).

There must be a willingness on the part of the staff to learn about their patrons' searching habits and to examine their services from a user's standpoint. They may be surprised at what this reveals. As Berman observes,

> The catalog presumably facilitates access to the public library's stock by the public library's clientele and staff. Presumably, that is. In fact, it doesn't quite work that way (1979, 225).

Libraries, like other institutions, presume that their system is operating smoothly, unless otherwise informed. Many times, patrons have problems conducting searches, but assume that the problem lies with them, not the catalog. Therefore, they do not make library staff aware of their struggles, out of fear of appearing unintelligent. Most of the time, it is only through studies and surveys that librarians are made aware of problems in their services. Specialized studies by scholars and critics in the library science field can yield findings that can improve library services for all involved. In demonstrating a commitment to quality control, libraries have to make the effort, or permit researchers to make the effort for them, in discovering what patrons need and what improvements they would like to see. Obtaining this sort of feedback from those they serve is the only way a library can discover how they feel they are serving

patrons, versus how patrons actually feel they are being served.

Surprisingly, few studies have been conducted on the quality of syndetic structure in library catalogs, and fewer still pertain to public libraries. Joseph W. Palmer's study was the only article my literature review uncovered pertaining, in part, to public libraries. With regard to the libraries he examined in Erie County, NY, Palmer concluded that:

> Only the largest libraries were able to provide any kind of subject authority control...not even the largest libraries were able to provide the 'see also' references upon which the Library of Congress assignment of subject headings is based (1986, 71).

While Palmer does not suggest that these findings are necessarily projectable to all libraries in every county in the United States, he does feel that his research raises some important questions for future study. One such question is, "How important, really, are subject authority control, collocation, 'see' and 'see also' references?" (1986, 89). To this, he responds, "Research is needed into how and if these features actually affect the ability of patrons to locate and retrieve materials" (89). Libraries cannot modify services when they are not aware of problems that call for modifications. This all requires investigation.

Connell responds to this request for further research on this topic with her forthcoming article, "Use of the LCSH System: Realities." Here, she examines the "question of whether academic libraries keep up with the changes made by LC in the Library of Congress subject heading system" (1996?, 21). The answer, in the

context of the libraries examined in her study, is no; not surprisingly, monetary cost is the explanation. However, Connell is quick to remark that the users carry this burden in terms of wasted searching time, and their costs are not directly traceable to dollar signs, as are other factors in the library's services. Therefore, subject authority control is overlooked in the rush to get new books into circulation, and to address immediate patron needs. Unfortunately, the decision to brush this to the side can come back to haunt a library, as it continually pours both funds and faith into a catalog which is inefficient. Only through raised awareness of this problem through studies and research can practicing librarians see how this can occur in their own library. The more this problem is researched in various parts of the country, in various types of libraries, the more librarians can be made aware of the commonality of the problem.

It is vital that libraries recognize that the solution to this problem lies with them. It is not enough to simply accept copy cataloging for individual items from OCLC or other sources, and incorporate that into the catalog without establishing the item's relationship to items previously cataloged. Runkle reminds librarians that "the provision of cross-references and the maintenance of heading structure require local effort" (1980, 604). Items will not magically link themselves correctly to other items pertaining to the same subject, especially if there have been recent changes affecting that subject heading. Though services such as OCLC will provide the most current subject

headings for their cataloging records, OCLC cannot update what a library cataloged in the past.

> The intellectual organization of the catalog must still be maintained by human beings who assign subject headings that link and integrate ideas to the bibliographic record using a controlled vocabulary (Lipow, 1983, 81).

The libraries themselves must keep their authority files and guarantee the currency of those authority files by periodically checking them against LC's most current headings, through a service such as OCLC's subject authoritly files. Only by practicing these procedures and making needed changes can libraries ensure that they are making a conscientious effort to provide patrons with quality subject access.

## METHODOLOGY

An evaluation of syndetic structure was tested in the public library OPACs in Franklin County, Ohio. The varying sizes of the library systems made an interesting point of comparison as to whether or not size seems to play a role in subject authority control. In this article, the selected OPACs are referred to as: A, B, C, D, and E. Dial-access was used to research each online catalog, when possible.

There are several terms that need to be clarified in the context of this study. Syndetic structure refers to the "see" and "see also" references in a libray's catalog. Authority work refers to:

> the process of determining the form of a name, title or subject concept that will be used as a heading on a bibliographic record; determining cross references needed to that form; and determining the relationship of this heading to other authoritative headings (Taylor, 1984, 1).

The authority work in question is that of the above-mentioned libraries. The term authority file refers to a subject authority file, which contains the established heading form, scope notes, "see" and "see also" references for each subject heading. The only authority file that was consulted during the course of this project was the subject authority file of the Library of Congress, as loaded onto OCLC.

Since this study was conducted in the public library sector, fifteen subject headings for current topics of interest were selected. They were chosen after an informal conversation with several circulation clerks and reference librarians from the five libraries revealed that materials on these subjects were currently very popular with patrons. Library employees identified certain themes as frequently asked reference questions and materials on these subjects as having a high circulation rate. The subject headings that were tested are: Abortion, AIDS (Disease), Antiques, Automobile mechanics, Computer programs, Dietetic foods, Dinosaurs, Drug abuse, Gardening, Hobbies, House Consruction, Occultism, Pregnancy, Sports Injuries, and Stress (Psychology). These headings were chosen entirely on their perceived popularity by library staff; sampling was not used. The Library of Congress subject authority records on OCLC were consulted to provide information concerning scope notes (found in

the 360 and 680 fields), "see from references (in the 4xx fields) and "see also from" references (in the 5xx fields). It was determined that each subject heading had an adequate number of broader terms, scope notes and former headings to generate a sufficient amount of data for this study (See Appendix 1).

From here, a list of questions was compiled, along with the intended procedures for obtaining answers to those inquiries:

1) Does the library in question use the subject heading in their catalog?

   Each subject heading studied was entered in the catalog to see if any materials are listed under heading. If not, the ensuing questions were not examined for that subject heading in that particular library.

2) Do the public libraries in Franklin County, Ohio make the appropriate "see also" references from the broader terms to the narrower terms?

   The 5xx fields of the LC authority files for each subject heading was examined to determine which were the broader terms for the subject heading in question. These were each entered into the catalog to find out if a "see also" reference was made from that term to the selected subject heading. Each subject heading was also be entered in a search in each OPAC to see if it yielded appropriate access to the narrower terms as per LC.

3) Do these same libraries make "see also" references from related term to related term?

The 5xx fields were again examined, this time to determine which are the related terms. The related terms listed in the 5xx fields were entered in a search to see if each catalog gave the appropriate "see also" reference from the term in the 5xx field, to the chosen subject heading. The relationship was also tested from the standpoint of the subject heading to the term in the 5xx field. Note was taken of whether or not the library owned materials for the related terms in the 5xx field.

4) Do the libraries make the appropriate "see" references from the earlier established form of a subject heading, or the forms not used, to the most current form?

For those subject headings selected that had former headings, the former heading(s) were taken from the 4xx field(s) to observe if the libraries gave a "see" reference from that heading to the current heading presecribed by the LC authority file. Similarly, a check was made to see if there were materials entered under the former headings and headings not used, or entered under these and the current heading, as well.

5) Do the library catalogs contain any blind leads?

Blind leads suggest that a catalog user search under a subject heading for which there are no materials entered.

In gathering data, it was noted whether the catalogs actually had materials listed under each subject heading to which a "see" or "see also" reference was made. If not, the catalog contained blind leads, which sent the user to a subject heading for which there are no titles.

Each of these research questions were incorporated into a data analysis tool, which can be found in Appendix 2. This tool is represented as a sheet on which the answers to the questions were organized, entered and, later, analyzed for the research paper.

## RESULTS

The selection of subject headings for this project provided a good foundation for study of the five library catalogs' use of the Library of Congress Subject Headings. Of the fifteen subject headings, thirteen were used in all five library cataloging systems. Only two were used by less than one hundred percent of the libraries. Dietetic foods was used in only two of the five cataloging systems; sports injuries was used in three libraries. A retrospective check of the Library of Congress Subject Headings shows that Dietetic foods and Sports injuries are more recent additions to the list of subject headings than the other thirteen headings. Dietetic foods first appeared in LCSH in 1990; it was previously Food, Dietetic. Sports injuries first appeared in 1994, and was previously used as Sports- Accidents and Injuries.

Due to the recency of these subject headings, it is little surprise that they did not score a one hundred percent representation in the libraries' catalogs. This signifies one of two things: either the libraries do not practice retrospective cataloging enough, or even at all; or, the subject matter is too new for libraries to have acquired materials in theses areas. In the case of the subject heading Dietetic foods, the two libraries (Libraries B and C) that used the heading had materials cataloged under both the current heading and the former heading (Food, Dietetic), with no linking references to alert the user that material may be found under both headings. According to LC rules the former headings should not still be used in the catalog; only the most current heading should be assigned to materials. Therefore, these libraries did not do a check for the older heading when they cataloged the more recent material under the new heading.

Conversely, more care was taken in the use of the subject heading Sports injuries. Two of the three libraries (Library B and Library E) that used the heading used the proper "see" references from the former heading to the current heading. Library C, once again, failed to provide this reference and, thus, had materials cataloged under both the former and the current heading. The remaining two libraries apparently did not have materials on this particular topic, since checks of both the former and the current headings revealed zero hits. Similarly, checking the three libraries that did not use Dietetic foods for the former and the current headings revealed zero hits.

Despite these two exceptions, the overall selection of subject headings provided a good basis for research, as the subject headings represent a variety of topics of current interest, often sought by public library patrons of varying age groups. The headings were used by most of the libraries and had characteristics which made them ideal for this type of research. Of the fifteen subject headings, some were new headings, some had former headings, and some had an extensive listing of 400 and/or 500 fields on their subject authority records. Thus, there was an opportunity to evaluate various aspects and features of the libraries' catalogs, and to observe any patterns or variations from the prescribed practice.

The results of whether the five public library cataloging systems in Franklin County provided the prescribed "see also" references from broader term to narrower term varied greatly from library to library. The broader terms are located in the 550 field in the OCLC subject authority records, in subfield w. Most of the broader terms were used by each of the libraries, with use ranging from 82% to 94% (See Table 1). This shows that the broader terms for each of the subject headings (if applicable) were present, at least in part, in all of the catalogs. "See also" references should, therefore, lead the user from these broader terms to the subject heading under study. However, this did not always occur.

TABLE 1

Number of Prescribed BT 550 Headings Used by Libraries

| Heading | Libraries | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| | References made/Potential references (%) | | | | |
| Abortion | 3/3(100%) | 2/3( 67%) | 3/3(100%) | 3/3(100%) | 3/3(100%) |
| AIDS (Disease) | 1/3(100%) | 2/3( 67%) | 1/3( 33%) | 2/3( 67%) | 2/3( 67%) |
| Antiques | 6/6(100%) | 6/6(100%) | 6/6(100%) | 6/6(100%) | 6/6(100%) |
| Automobile mechanics | 1/2( 50%) | 0/2( 0%) | 1/2( 50%) | 1/2( 50%) | 2/2(100%) |
| Computer programs | 1/2( 50%) | 2/2( 50%) | 2/2(100%) | 1/2( 50%) | 2/2(100%) |
| Dietetic foods | not used | 1/1(100%) | 1/1(100%) | not used | not used |
| Dinosaurs | 1/1(100%) | 1/1(100%) | 1/1(100%) | 1/1(100%) | 1/1(100%) |
| Drug abuse | 1/2( 50%) | 1/2( 50%) | 2/2(100%) | 1/2( 50%) | 1/1(100%) |
| Hobbies | 5/5(100%) | 5/5(100%) | 5/5(100%) | 5/5(100%) | 1/1(100%) |
| House Construction | N/A | N/A | N/A | N/A | N/A |
| Landscape gardening | 5/6( 83%) | 5/6( 83%) | 6/6(100%) | 6/6(100%) | 6/6(100%) |
| Occultism | 2/2(100%) | 2/2(100%) | 2/2(100%) | 2/2(100%) | 2/2(100%) |
| Pregnancy | 3/4( 75%) | 4/4(100%) | 3/4( 75%) | 3/4( 75%) | 3/3(100%) |
| Sports injuries | not used | 2/2(100%) | 2/2(100%) | not used | 1/2(50%) |
| Stress (Psych.) | 2/2(100%) | 2/2(100%) | 2/2(100%) | 2/2(100%) | 2/2(100%) |
| Total: | 31/38(82%) | 35/41(85%) | 36/41(88%) | 33/38(87%) | 32/34(94%) |

Each library catalog was tested to see if a "see also" reference was made from each 550 broader term to each 150 narrower term selected for this study. The findings varied greatly, ranging from 0% to 100% used. (See Table 2). The percentages were based on the total number of 550 references given for all of the subject headings used, divided by the total number of possible 550 references for all of the subject headings used. Library A, Library C and Library D rated 0%, as their catalogs simply do not give any type of "see also" references from broader term to narrower term.

In contrast, Library B used 60% of the possible "see also" references. Subject headings for which Library B gave zero references were: Automobile mechanics, Dietetic foods, Dinosaurs, Drug abuse, Hobbies, Landscape gardening and Stress (Psychology). For all of these, there were broader terms present in the catalog. However, Library B only gives "see also" references for slightly over half of the possible broader term- narrower term relationships for the subject headings tested, their catalog gives "see also" references from the narrower term to the broader term, in addition to the broader term to narrower term references. This practice is not prescribed by the Library of Congress subject heading system and, therefore, should not be used. Providing "see also" references in two directions for a broader term- narrower term relationship can only succeed in confusing the user. Fortunately, this practice was not followed by any of the remaining four libraries.

TABLE 2

Number of Prescribed 550 to 150 Headings Used in this Study

| Heading | Libraries | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| | References made/Potential references | | | | |
| Abortion | 0/3( 0%) | 2/3( 67%) | 0/3( 0%) | 0/3( 0%) | 3/3( 0%) |
| AIDS (Disease) | 0/3( 0%) | 2/3( 67%) | 0/3( 0%) | 0/3( 0%) | 3/3(100%) |
| Automobile mechanics | 0/2( 0%) | 0/2( 0%) | 0/2( 0%) | 0/2( 0%) | 2/2(100%) |
| Computer programs | 0/2( 0%) | 1/2( 50%) | 0/2( 0%) | 0/2( 0%) | 2/2(100%) |
| Dietetic foods | not used | 0/1( 0%) | 0/1( 0%) | not used | not used |
| Dinosaurs | 0/1( 0%) | 0/1( 0%) | 0/1( 0%) | 0/1( 0%) | 1/1(100%) |
| Drug abuse | 0/2( 0%) | 0/2( 0%) | 0/2( 0%) | 0/2( 0%) | 2/2(100%) |
| Hobbies | 0/6( 0%) | 0/6( 0%) | 0/6( 0%) | 0/6( 0%) | 6/6(100%) |
| House construction | N/A | N/A | N/A | N/A | N/A |
| Landscape gardening | 0/6( 0%) | 0/6( 0%) | 0/6( 0%) | 0/6( 0%) | 6/6(100%) |
| Occultism | 0/2( 0%) | 2/2(100%) | 0/2( 0%) | 0/2( 0%) | 2/2(100%) |
| Pregnancy | 0/3( 0%) | 3/3(100%) | 0/3( 0%) | 0/3( 0%) | 3/3(100%) |
| Sports injuries | not used | 2/2(100%) | 0/2( 0%) | not used | 2/2(100%) |
| Stress (Psych.) | 0/2( 0%) | 2/2(100%) | 0/2( 0%) | 0/2( 0%) | 2/2(100%) |
| Total: | 0/32( 0%) | 21/35(60%) | 0/35( 0%) | 2/32( 6%) | 32/32(100%) |

Library E made 100% of the prescribed "see also" references

from broader terms to narrrower terms. Its system gave cross-references from broader terms not used to the narrower term, the subject heading. When a broader term that was not being used was entered, the system stated that the term was not currently being used, and gave a list of terms which were used. This is the most correct way of using syndetic structure. A catalog user should be able to enter a term, used or not used in the catalog, and still gain access to related subject headings that are currently in the catalog. If this is not done, the user believes that there are no materials in the library on that subject, or even related subjects. Overall, Library E's patrons should not encounter many problems being led from the broader terms to the narrower terms.

Another issue which affects the relationship of the 1xx and 5xx MARC fields is that of "see also" references from related term to related term. This involves references from the 5xx term to the 1xx term and vice versa. This is the only instance where the Library of Congress actually prescribes a reference from the subject heading in the 1xx field to the 5xx field. The usage of the 550 related term headings ranged from 58% to 75% used in five catalogs (See Table 3). As with the findings for the broader term to narrower term relationship, the findings for the related term to related term cross-references also varied greatly.

TABLE 3

Number of Prescribed 550 Related Term Headings Used in this Study

Libraries

| Heading: | A | B | C | D | E |
|---|---|---|---|---|---|
| | Number Used/Potential Number (%) | | | | |
| Antiques | 1/1(100%) | 1/1(100%) | 1/1(100%) | 1/1(100%) | 0/1( 0%) |
| Drug abuse | 0/2( 0%) | 0/2( 0%) | 1/2( 50%) | 0/2( 0%) | 1/2(50%) |
| Landscape gardening | 2/5( 40%) | 2/5( 40%) | 3/5( 60%) | 3/5( 60%) | 4/5(80%) |
| Occultism | 2/2(100%) | 1/1(100%) | 1/1(100%) | 1/1(100%) | 1/1(100%) |
| Pregnancy | 1/1(100%) | 1/1(100%) | 1/1(100%) | 1/1(100%) | 1/1(100%) |
| Stress (Psych.) | 2/2(100%) | 2/2(100%) | 2/2(100%) | 2/2(100%) | 2/2(100%) |
| Total: | 8/13(62%) | 7/12(58%) | 9/12(75%) | 8/12(67%) | 9/12(75%) |

Again, Library A, Library C and Library D scored 0% in both the 5xx to 1xx and 1xx to 5xx categories (See Tables 4 & 5). These catalogs simply do not provide this type of cross-referencing for their users.

Library B's results were more consistent than those of the other four systems, in that the cross-references that the catalog did have were made in both directions, and not lacking in one direction. Library B provided 'see also' references for 42% of both the 5xx to 1xx related terms, and vice versa (See Tables 4 & 5).

TABLE 4

Number of Prescribed 550 to 150 References (RT to RT)

Used in this Study

| Heading | Libraries | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| | Number of references made/Potential number (%) | | | | |
| Antiques | 0/1( 0%) | 1/1(100%) | 0/1( 0%) | 0/1( 0%) | 1/1(100%) |
| Drug abuse | 0/2( 0%) | 0/2( 0%) | 0/2( 0%) | 0/2( 0%) | 1/2( 50%) |
| Landscape gardening | 0/5( 0%) | 0/5( 0%) | 0/5( 0%) | 0/5( 0%) | 5/5(100%) |
| Occultism | 0/1( 0%) | 1/1(100%) | 0/1( 0%) | 0/1( 0%) | 1/1(100%) |
| Pregnancy | 0/1( 0%) | 1/1(100%) | 0/1( 0%) | 0/1( 0%) | 1/1(100%) |
| Stress (Psych.) | 0/2( 0%) | 2/2(100%) | 0/2( 0%) | 0/2( 0%) | 2/2(100%) |
| Total: | 0/12( 0%) | 5/12(42%) | 0/12( 0%) | 0/12( 0%) | 11/12(92%) |

The percentage of references given in Library E's catalog from 550 to 150 was higher (92%) than that from 150 to 550 (83%) (See Tables 4 & 5). This library was consistent in giving references in both directions for four out of the six headings with related terms. In the case of the heading Drug abuse, one of the related terms was used in the catalog, but the reference simply was not made from 1xx to 5xx. Though Library E's catalog is not one hundred percent perfect in its cross-referencing between 1xx and 5xx and vice versa, it, once again, represents the most accurate use of "see also" references among the five library systems examined.

TABLE 5

Number of Prescribed 150 to 550 (RT to RT) Headings Used in this Study

| Heading: | Libraries | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E |
| | Number of references made/Potential number (%) | | | | |
| Antiques | 0/1( 0%) | 1/1(100%) | 0/1( 0%) | 0/1( 0%) | 0/1( 0%) |
| Drug abuse | 0/2( 0%) | 0/2( 0%) | 0/2( 0%) | 0/2( 0%) | 1/2(50%) |
| Landscape gardening | 0/5( 0%) | 0/5( 0%) | 0/5( 0%) | 0/5( 0%) | 5/5(100%) |
| Occultism | 0/1( 0%) | 1/1(100%) | 0/1( 0%) | 0/1( 0%) | 1/1(100%) |
| Pregnancy | 0/1( 0%) | 1/1(100%) | 0/1( 0%) | 0/1( 0%) | 1/1(100%) |
| Stress (Psych.) | 0/2( 0%) | 2/2(100%) | 0/2( 0%) | 0/2( 0%) | 2/2(100%) |
| Total: | 0/12( 0%) | 5/12(42%) | 0/12( 0%) | 0/12( 0%) | 10/12(83%) |

Of the fifteen subject headings used in this study, five had former headings: AIDS (Disease), Dietetic foods, Dinosaurs, Occultism and Sports injuries. Former headings are indicated in in the subject authority record by the presence of nne in subfield w of the 450 field. Only two of the five library catalogs examined made the effort to direct the user from the former subject heading to the current heading. Library B gave the appropriate "see" references for three out of five subject headings. It failed to give "see" references for Dietetic foods and for Dinosaurs. Both headings had materials cataloged under both the former and the

current headings. Library E did not use the heading Dietetic foods in its catalog, but gave "see" references for four out of four of the remaining headings.

Thirteen of the fifteen headings had forms not used (other than the former headings) on their subject authority records on OCLC. Forms not used but which are not former headings are 450 fields containing subject headings with no subfield indicated. As with the "see also" references, the percentages for these "see" references were calculated by dividing the number of total "see" references made for subject headings used. Though these findings varied greatly from library to library, they fell into a familiar pattern (See Table 6).

Library A, again, scored 0%, as it failed to provide any see references from forms not used to the current heading. Library C provided "see" references for two of the five forms not used for the heading Abortion. Library D provided two out of the three prescribed "see" references for the heading AIDS (Disease).

TABLE 6

Number of Prescribed 450 to 150 References

(from forms not used) Used in this Study

Libraries

| Heading: | A | B | C | D | E |
|---|---|---|---|---|---|
| | Number of references made/Potential number (%) | | | | |
| Abortion | 0/5( 0%) | 5/5(100%) | 2/5( 40%) | 0/5( 0%) | 5/5(100%) |
| AIDS (Disease) | 0/2( 0%) | 2/2(100%) | 0/2( 0%) | 2/2(100%) | 2/2(100%) |
| Antiques | 0/2( 0%) | 2/2(100%) | 0/2( 0%) | 0/2( 0%) | 2/2(100%) |
| Automobile mechanics | 0/2( 0%) | 2/2(100%) | 0/2( 0%) | 0/2( 0%) | 2/2(100%) |
| Computer programs | 0/3( 0%) | 3/3(100%) | 0/3( 0%) | 0/3( 0%) | 3/3(00%) |
| Dietetic foods | not used | 0/1( 0%) | not used | 0/1( 0%) | not used |
| Drug abuse | 0/4( 0%) | 4/4(100%) | 0/4( 0%) | 0/4( 0%) | 4/4(10%) |
| Hobbies | 0/2( 0%) | 0/2( 0%) | 1/2( 50%) | 0/2( 0%) | 2/2(100%) |
| House constr. | 0/5( 0%) | 5/5(100%) | 0/5( 0%) | 0/5( 0%) | 4/5( 80%) |
| Occultism | 0/1( 0%) | 1/1(100%) | 0/1( 0%) | 0/1( 0%) | 1/1(100%) |
| Pregnancy | 0/1( 0%) | 0/1( 0%) | 0/1( 0%) | 0/1( 0%) | 1/1(100%) |
| Sports injuries | not used | 4/4(100%) | 0/4( 0%) | 0/4( 0%) | 4/4(100%) |
| Stress (Psych.) | 0/4( 0%) | 0/4( 0%) | 0/4( 0%) | 0/4( 0%) | 4/4(100%) |
| Total: | 0/31( 0%) | 28/36(78%) | 3/35( 9%) | 2/36( 6%) | 34/35(97%) |

Library B provided 78% of the see references prescribed for its catalog. It failed to provide "see" references for the subject headings Hobbies and Stress (Psychology). It provided "see also" references for Stress (Psychology), so it was somewhat of a surprise that they did not also provide the "see" references, especially since the forms not used for this term seemed like terms patrons might enter, such as: Emotional stress, Mental stress, Psychological stress and Tension (Psychology).

Library E provided the greatest percentage of "see" references from forms not used. For the fourteen subject headings used in its catalog, all but one prescribed "see" reference was made. The catalog failed to provide a reference from Home building to House construction. Perhaps this was an oversight, or it was considered redundant to furnish this reference when references were provided from terms such as Building, House and Home construction. Regardless, Library E's score of 97% was much higher than that of the other four libraries.

Another issue associated with the 1xx and 4xx fields involves the number of instances where a subject heading has materials assigned to headings in both the 1xx and 4xx fields within the same library. This occurs when libraries do not update subject headings. Library E had no instances of materials assigned to 1xx and 4xx headings. However, the same was not true for the remaining four libraries.

Library B had two instances, occurring for Dietetic foods and

Dinosaurs, showing that the library has materials under both the former headings and current headings for these two subject headings. Library A had four instances: two occurring for AIDS (Disease)- (one for the former heading and one for a form not used), one for a form not used for Antiques, and one for the former heading of Dinosaurs. Library D had six instances: two for Antiques, one for Dinosaurs, two for Occultism (the former heading and form not used), and one for Sports injuries (for the former heading).

Library C's catalog, on the other hand, contained twenty instances, of materials assigned to headings in both the 150 and 450 fields. Of the fourteen relevant subject headings, only three did not have materials assigned to both the 1xx and 4xx fields: AIDS (Disease), Dinosaurs, and Pregnancy. The remaining eleven subject headings had former headings and/or headings not established for use by LC, assigned to materials in the catalog, in addition to the current heading. All of the previously-mentioned instances occurred with the absence of any type of acknowledgement that a heading with similar meaning exists. Patrons could search under a former heading and find materials, not knowing they should also check the current heading for additional materials. In this manner, oversights in cataloging create a barrier for access between the patron and useful, relevant information.

The final goal of this evaluation was to determine whether any of the libraries' catalogs contained blind leads, which lead

the user to a subject heading for which there are no materials in the library. The research did not reveal any blind leads in any of the catalogs for the fifteen subject headings tested. The various catalogs do, however, have different methods of addressing the fact that a subject heading is not present in the catalog. Library A's catalog guides the user to the next subject heading in alphabetical order; and, very often the next subject heading is not even a related topic. For example, when the user enters the heading Feticide, the catalog replies "see Fetishism." If the patron does not realize that the computer is simply sending him or her to the next heading in alphabetical order, he or she will be confused as to why they can't find materials on the topic. Library D presents a screen showing where the term would appear in the alphabetical listing in the catalog. For the user, this is better because it does not tell the patron to search an unrelated topic. Library C's catalog shows how many items match the search, as its subject searching is based solely on a keyword searching operation.

Library B, relates a clear message to the user if a subject is not being used. The message states this subject heading is not currently used, see the heading that is currently used. Library E, likewise, indicates if a heading is not currently being used. These libraries have catalogs that are more complex than the other three; they provide cross-references, while Library A, Library C and Library D provide few or no such references. Despite their faults, these five systems do not contain any blind leads for

the fifteen subject headings used in this study. Of course, one of the limitations of this study is that the subject headings were not chosen randomly, but rather, they were chosen because they represent popular topics. Therefore, perhaps it has not been necessary to pull any materials on these topics from the shelves due to age, or dated material. Another possible explanation for the absence of blind leads may be due to the fact that three of these catalogs generally lack cross-referencing. It is difficult for a catalog to give the user a blind lead when it, essentially, gives no leads at all. The remaining two catalogs do provide cross-references and appear to be updated more often, and consequently, their procedures help them to avoid blind leads.

## CONCLUSIONS

This study evaluated the use of "see" and "see also" references in the public library cataloging systems in Franklin County, Ohio. The results were disappointing. Overall, only two of the five libraries (Library B and Library E) provided any type of "see" and "see also" references consistently. The remaining three libraries: Library A, Library C and Library D made few or no such references at all.

The funds and staff time necessary to furnish "see" and "see also" references and to maintain accurate subject authority files through the practice of periodic, retrospective cataloging is, sadly, more than many libraries can afford, or are willing to

make a decision to afford. Many of the smaller, public systems such as Library A, Library C and Library D respond to this fact by simply either not providing cross-references or providing only a very few. In this manner, they manage to avoid the cost and the labor surrounding linking subject headings. Library C has chosen to make their subject searching capabilities based on keyword operators for the entire record. Library D simply gives the user an alphabetical listing of headings used out of the catalog. Library A's method of suggesting that the patron search the next subject heading in alphabetical order if the one they selected is not available, is misleading. It would be better if they simply asked the patron to enter a new search, or displayed an alphabetical listing, as Library D does.

There is a common belief that the larger a library system is, the better it is able to serve its patrons. This is not always true, as is evident in the comparison of the results between Library B and Library E. Library B was, by far, the largest cataloging system examined in this study, as it encompasses its own large system with numerous branches, plus two other public libraries. Library B's size appeared to be a handicap when it came to supplying cross-refernces, as it performed significantly lower than Library E in all areas examined. Library B has the largest cataloging department of the five libraries, yet its cross-referencing is poor when compared tothat of Library E, a medium-sized library system. It does not seem valid to state that a library's small or large sized status necessarily gives it an

advantage or a disadvantage when it comes to the quality of the cross-references in its catalog. Rather, these data indicate that the library that is willing to commit the funds and staff time to quality cataloging will have the best cross-referencing.

However, the issues of funds, staff time and the needs and demands of the patrons force libraries to make difficult decisions. Libraries must decide whether it is more important to provide thorough, expensive subject cataloging at the price of a slower processing rate, or whether it is more important to process materials quickly at the price of lower quality subject access. Frequently, the speedy processing wins. An assumption of librarians is that most public library patrons are content with their library, as long as they see new books on the shelves and can find some materials on their desired topic. Another assumption by librarians is that because the average patron does not have any knowledge of LCSH or its syndetic structure, they do not know how a library catalog is supposed to work when done properly. As long as the catalog gives them some type of response other than an error when they conduct a search, the typical patron is satisfied with the matches they received, and it might not occur to them to question whether or not that is truly all of the materials the library owns on that subject. Patrons do not voice complaint, as they do not realize that the catalog may have misguided them, or cheated them entirely. Research conducted in the area of patron satisfaction with library OPACs could test these assumptions and if found to be incorrect, could give the public a voice and make librarians

aware of a need for improved subject access.

The cataloging staff, like the patrons, can fall into the trap of believing that since the catalog is computerized, everything will fall into place, and the computer is capable of catching errors and recognizing when cross-references have or have not been made. Computerized cataloging systems are only as accurate as the information that has been entered into them. It is true that subject cataloging is expensive and labor-intensive, but librarians need to ask themselves whether it is worth their while to continue pouring funds and staff time into a cataloging system that really does not serve its users. This point is made out of concern for both the user and the library itself. A library cannot hope to properly serve its users when its catalog does not reflect changes in subject headings and syndetic structure prescribed by LC When the catalog does not allow the staff itself to observe linkages through subject searching to recognize the need for revision, the catalog is costing the library more in terms of wasted searching time and unfulfilled information needs than it may have initially saved the library in terms of funds.

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APPENDIX 1

Established Headings (1xx) Used in Study

with accompanying 4xx and 5xx fields

1. 150 Abortion
   450 Abortion, Induced [EARLIER ESTABLISHED FORM]
   450 Feticide
   450 Induced abortion
   450 Pregnancy termination
   450 Termination of pregnancy
   550 Birth control [BROADER TERM]
   550 Fetal death [BROADER TERM]
   550 Obstetrics--Surgery [BROADER TERM]

2. 150 AIDS(Disease)
   450 Acquired immune deficiency syndrome [EARLIER EST. FORM]
   450 Acquired immunodeficiency syndrome
   450 Acquired immunological deficiency syndrome
   550 HIV infections [BROADER TERM]
   550 Immunological deficiency syndromes [BROADER TERM]
   550 Virus-induced immunosuppression [BROADER TERM]

3. 150 Antiques
   450 Antique collecting
   450 Antiques--Collectors and collecting
   550 Antiquities [BROADER TERM]

550 Art [BROADER TERM]

550 Collectibles [BROADER TERM]

550 Collectors and collecting [BROADER TERM]

550 Decoration and ornament [BROADER TERM]

550 Decorative arts [BROADER TERM]

550 Art objects [RELATED TERM]

4. 150 Automobile mechanics

450 Auto mechanics

450 Automobile workers

550 Automobile industry workers [BROADER TERM]

550 Mechanics(Persons) [BROADER TERM]

5. 150 Computer programs

450 Computer program files

450 Files, Computer program

450 Program files, Computer

550 Computer files [BROADER TERM]

550 Computer software [BROADER TERM]

6. 150 Dietetic foods

450 Food, Dietetic [EARLIER EST. FORM]

550 Food [BROADER TERM]

7. 150 Dinosaurs

450 Dinosauria [EARLIER EST. FORM]

550 Reptiles, Fossil [BROADER TERM]

8. 150 Drug abuse

450 Addiction to drugs

450 Drug addiction

450 Drug habit

450 Drug use

550 Crimes without victims [BROADER TERM]

550 Substance abuse [BROADER TERM]

550 Drugs--Overdosage [RELATED TERM]

550 Drugs of abuse [RELATED TERM]

9. 150 Hobbies

450 Avocations

450 Recreations

550 Amusements [BROADER TERM]

550 Collectors and collecting [BROADER TERM]

550 Handicraft [BROADER TERM]

550 Leisure [BROADER TERM]

550 Play [BROADER TERM]

550 Recreation [BROADER TERM]

10. 150 House construction

450 Building, House

450 Construction, House

450 Home building

450 Home construction

450 Residential construction

11. 150 Landscape gardening

550 Forests and forestry [BROADER TERM]

550 Gardening [BROADER TERM]

550 Hedges [BROADER TERM]

550 Horticulture [BROADER TERM]

550 Parks [BROADER TERM]

550 Trees [BROADER TERM]

550 Gardens--Design [RELATED TERM]

550 Horticultural service industry [RELATED TERM]

550 Landscape architecture [RELATED TERM]

550 Landscaping industry [RELATED TERM]

550 Ornamental horticulture [RELATED TERM]

12. 150 Occultism

450 Occult, The

450 Occult sciences [EARLIER EST. FORM]

550 Religions [BROADER TERM]

550 Supernatural [BROADER TERM]

550 Parapsychology [RELATED TERM]

13. 150 Pregnancy

450 Gestation

550 Conception [BROADER TERM]

550 Physiology [BROADER TERM]

550 Reproduction [BROADER TERM]

550 Obstetrics [RELATED TERM]

14. 150 Sports injuries

450 Athletes--Wounds and injuries

450 Athletic injuries

450 Injuries, Sports

450 Injuries from sports

450 Sports--Accidents and injuries [EARLIER EST. FORM]

550 Sports medicine [BROADER TERM]

550 Wounds and injuries [BROADER TERM]

15. 150 Stress(Psychology)

450 Emotional stress

450 Mental stress

450 Psychological stress

450 Tension(Psychology)

550 Mental health [BROADER TERM]

550 Psychology [BROADER TERM]

550 Life change events [RELATED TERM]

550 Type A behavior [RELATED TERM]

APPENDIX 2

DATA ANALYSIS SHEET

Library: _____

Subject Heading: _____

| | Y/N | 5xx assigned to mat. in cat.? | "See also" from 5xx to 1xx? | From 1xx to 5xx? | From former heading? | From forms not used? | Mats. assnd. to 1xx & 4xx? |
|---|---|---|---|---|---|---|---|
| 1) Does the library use the subject heading? | | | | | | | |
| 2) Does the library make the prescribed "see also" references from BT to NT? | | | | | | | |
| 3) Does the library make the "see also" refs. from RT to RT? | | | | | | | |
| 4) Does the library make the "see" refs. from 4xx to 1xx? | | | | | | | |

Additional observations: